2. AVRA Water Cooperative

The AVRA Water Cooperative service area is within the general Tucson area and is located north and west of Saguaro National Park (west), east Range 10 east, and south of Magee Road. The AVRA Water Cooperative is a nonprofit water cooperative regulated by the Arizona Corporation Commission. It is located in the Avra Valley sub-basin and encompasses about 12 square miles just northwest of the Saguaro National Monument West. Water use is about 79 percent residential and 14 percent non-residential. In the AVRA Water Cooperative service area in 1998, a total of approximately 935 af of groundwater was pumped and delivered.

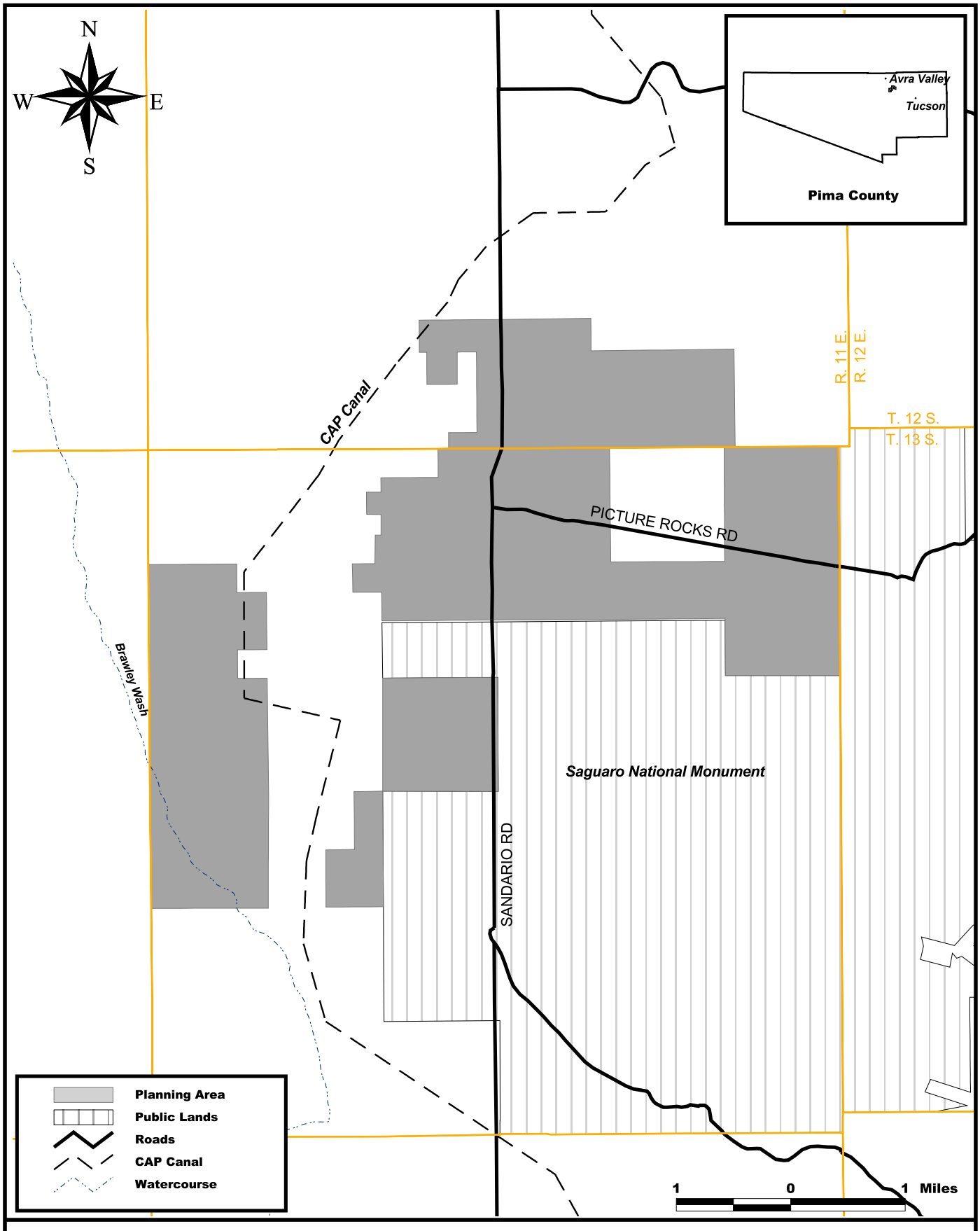
A. Plans to Take and Use CAP Water

AVRA Water Cooperative currently has no contract for CAP water. Under the Settlement Alternative AVRA Water Cooperative would receive 808 af of CAP water. That CAP water would be delivered for a 50-year contract period (i.e., from 2001-2051). The CAP water would be used to supplement both current and projected water supply demands over the next 50 years and would help reduce the continuing dependence on pumping groundwater from an overdrafted groundwater system. Table L-M&I-9 outlines the proposed allocation by alternative.

Table L-M&I-9
CAP Allocation Draft EIS
AVRA Water Cooperative – Proposed CAP Allocation

Alternative	Allocation (in afa)	Priority
Settlement Alternative	808	M&I
No Action	0	-
Non-Settlement Alternative 1	808	M&I
Non-Settlement Alternative 2	0	-
Non-Settlement Alternative 3A	0	-
Non-Settlement Alternative 3B	884	NIA
Existing CAP Allocation	-	-

Figure L-M&I-5 shows the AVRA Water Cooperative service area, which covers approximately 7,864 acres. As they are not currently receiving an allocation, they currently have no facilities in place to take and use CAP water. In order to take and use the allocation, AVRA Water Cooperative would recharge the CAP water and recover it through pumping groundwater. The recharge could be indirect as in-lieu with local farmers. Alternatively, AVRA Water Cooperative would work together with other agencies to use the allocation for direct recharge. The AVRA Water Cooperative would likely work with the AVRA Valley Recharge Facility in this effort. They currently have no plans for constructing any facilities to obtain and deliver CAP water (Lytle 2000).



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CAP Allocation Draft EIS
General Location Map
AVRA Water Cooperative

June 2000

Figure #L-M&I-5

B. Population Projection

The estimated 2001 population level for the AVRA Water Cooperative service area is 5,623 and the estimated 2051 population level is estimated to be 19,621.

C. Water Demand and Supply Quantities

As previously shown in Appendix C–M&I Sector Water Uses, it is estimated that water demand for the AVRA Water Cooperative service area would increase from 755 af in year 2001 to 2,634 af in year 2051. The projected water uses both by water source and alternatives are provided below in Table L-M&I-10. Based on anticipated water demands, the CAP water which would be allocated under the Settlement Alternative would provide 100 percent and 31 percent of the estimated water supply required for the AVRA Water Cooperative service area for the years 2001 and 2051, respectively.

Table L-M&I-10
CAP Allocation Draft EIS
AVRA Water Cooperative – Projected Water Use

Alternative	Annual CAP Deliveries		Groundwater		Effluent		CAGRD (Groundwater)		Total Demand	
	2001	2051	2001	2051	2001	2051	2001	2051	2001	2051
Settlement Alternative	0	808	755	0	0	0	0	1,826	755	2,634
No Action	0	0	0	0	0	0	755	2,634	755	2,634
Non-Settlement Alternative 1	0	808	755	0	0	0	0	1,826	755	2,634
Non-Settlement Alternative 2	0	0	0	0	0	0	755	2,634	755	2,634
Non-Settlement Alternative 3A	0	0	0	0	0	0	755	2,634	755	2,634
Non-Settlement Alternative 3B	0	808	755	0	0	0	0	1,826	755	2,634

Note: A more detailed breakdown of supplies may be found in Appendix C.

It is estimated that the demand for water at the end of the CAP contract period would be approximately 2,634 af. For all alternatives, there is estimated to be no unmet demand. In the Settlement Alternative, Non-Settlement Alternative 1 and 3B, 808 afa of demand are met by the additional CAP allocation. Alternatively, this 808 afa of demand is met by CAGRD membership under the No Action Alternative and Non-Settlement Alternative 2 and 3A.

D. Environmental Effects

The following sections include a general description of existing conditions relating to land use, water resources and socioeconomics for each entity. The following summaries also include a description of the existing conditions and brief description of the impacts to biological and cultural resources that would result from construction of CAP delivery facilities and conversion of desert and agricultural lands to urban uses.

1. Land Use

Land use data for the AVRA Water Cooperative were obtained based upon the review of 1998 aerial photographs and the result of the field surveys and habitat mapping completed as part of the biological analysis in this EIS. Table L-M&I-11 provides the projected acres of land within the AVRA Water Cooperative service area which are agriculture, desert or urban and the number of acres expected to change from the existing category for the years 2001 and 2051.

TableL-M&I-11
CAP Allocation Draft EIS
AVRA Water Cooperative – Projected Land Use Changes Within the Service Area (in acres)

Alternative	Year	Agriculture	Agriculture Urbanized	Desert	Desert Urbanized	Urban	Changes to Urban Acreage
Settlement Alternative	2001	0	--	3,388	--	4,476	--
	2051	0	0	1,294	2,094	6,570	2,094
No Action	2001	0	--	3,388	--	4,476	--
	2051	0	0	1,294	2,094	6,570	2,094
Non-Settlement Alternative 1	2001	0	--	3,388	--	4,476	--
	2051	0	0	1,294	2,094	6,570	2,094
Non-Settlement Alternative 2	2001	0	--	3,388	--	4,476	--
	2051	0	0	1,294	2,094	6,570	2,094
Non-Settlement Alternative 3A	2001	0	--	3,388	--	4,476	--
	2051	0	0	1.294	2,094	6,570	2,094
Non-Settlement Alternative 3B	2001	0	--	3,388	--	4,476	--
	2051	0	0	1,294	2,094	6,570	2,094

2. Archaeological Resources

Only three surveys are documented for the AVRA Water Cooperative service area, most notably, portions of Reclamation's CAP survey (Teague and Crown 1984). No sites have been recorded within the AVRA Water Cooperative service area; however, some portions of the service areas are of moderate cultural resource density (e.g., Camp Pima, a Civilian Conservation Corps installation) (Allen 1979; Wells 1984). Numerous prehistoric, protohistoric, and historic sites also have been documented to the south (Saguaro National Monument) and northeast (Safford Peak). Prehistoric manifestations consist primarily of lithic scatters and small, special-use sites, although trails, petroglyphs, and multicomponent habitation sites also are present.

Cultural resource sensitivity areas in this entity are shown in Figure L-M&I-6. Based on the limited data used to generate the cultural sensitivity designations, the potential for cultural resource impacts in the AVRA Water Cooperative service area is low. Mitigation of cultural resource impacts due to urban expansion would be determined by local jurisdictions and development of applicable permit requirements (such as the CWA Section 404 permit). Impacts on cultural resources due to future land use changes would be identical for each of the five alternatives. Mitigation for such impacts would be dependent on the requirements of the local jurisdiction. If any new direct recharge facility is constructed to take their CAP allocation, there could be direct impacts on cultural resources. Reclamation would review the AVRA Water Cooperative's final plans for taking CAP water prior to water deliveries, and carry out additional cultural resources compliance as appropriate.

3. Biological Resources

Existing Habitats

The AVRA Water Cooperative service area occurs at the northwest base of the Tucson Mountains. Higher, coarser soils support a Bursage/Foothill Paloverde Association dominated mainly by bursage and creosote-bush. Dominant tree species include saguaro, foothill paloverde, desert ironwood and velvet mesquite. Saguaros are densely distributed. Most areas of silty alluvium have been developed for agriculture or housing but some Velvet Mesquite Association remains where saguaro density is low. The habitat zones located in the AVRA Water Cooperative service area are shown on Figure L-M&I-7. Table L-M&I-12 provides the habitat acreages in the AVRA Water Cooperative service area for the habitat zones described above.

TableL-M&I-12
CAP Allocation Draft EIS
AVRA Water Cooperative – Habitat Acreages

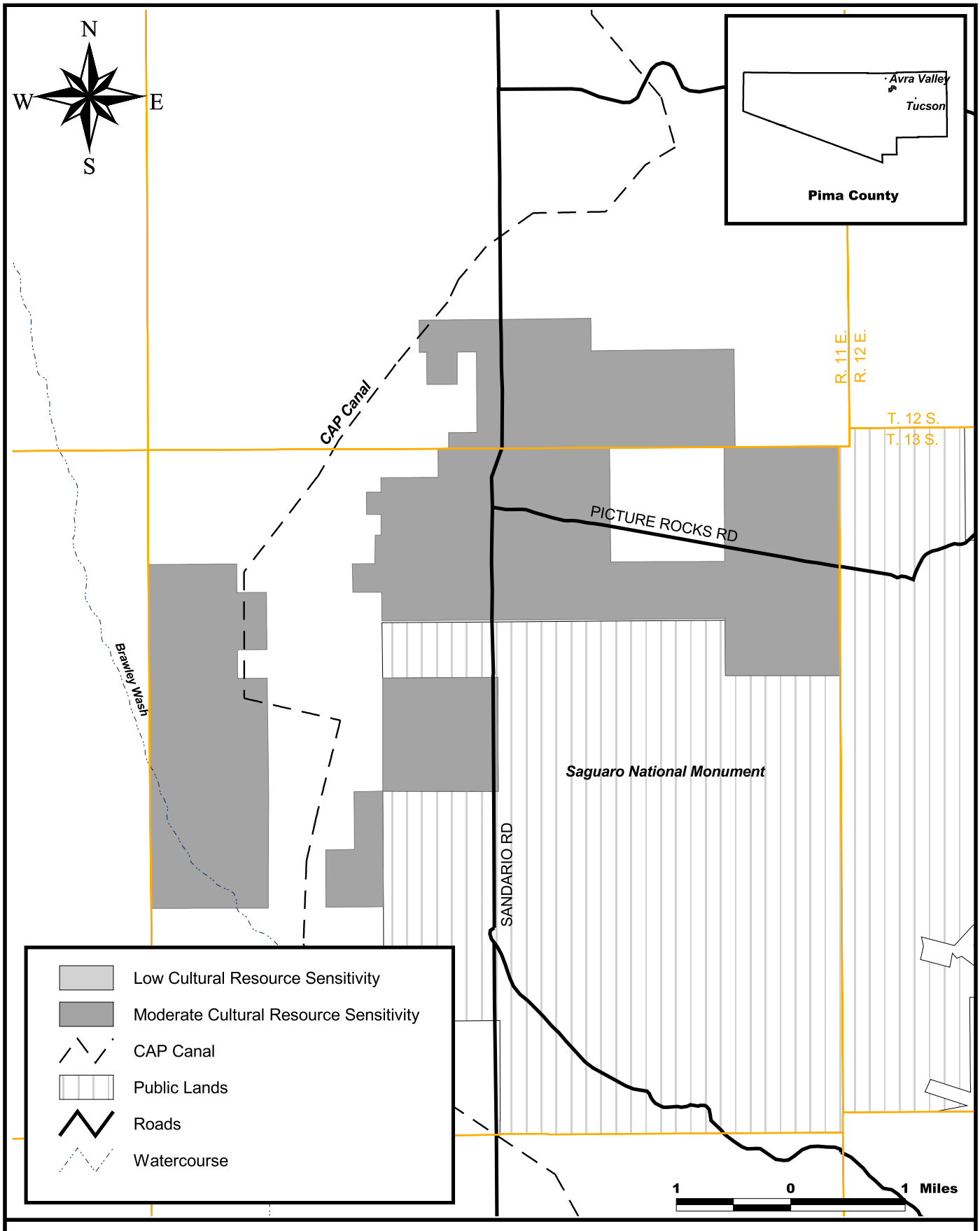
Vegetation Name	Acres
Developed	4,345
Bursage/Foothills Paloverde	1,675
Velvet Mesquite	1,194
Creosote Bush	650
Total	**7,864**

Impacts to Biological Resources

Under the No Action Alternative, urban growth within the AVRA Water Cooperative service area would result in loss of an estimated 4,476 acres of Sonoran Desertscrub and associated wildlife resources. Under the action alternatives, there is no difference in impacts from the No Action baseline. If direct recharge facilities are constructed to take CAP water, there could be impacts to biological resources, depending on the specific locations of the facilities. Once AVRA Water Cooperative's final plans are made, Reclamation would carry out the additional environmental review.

Potential T&E Species and Acres of Potential T&E Species Habitat

Because the allocation of CAP water has no effect on urban growth, there would be no effect on T&E species from the CAP allocation. The appropriate municipal or other local government



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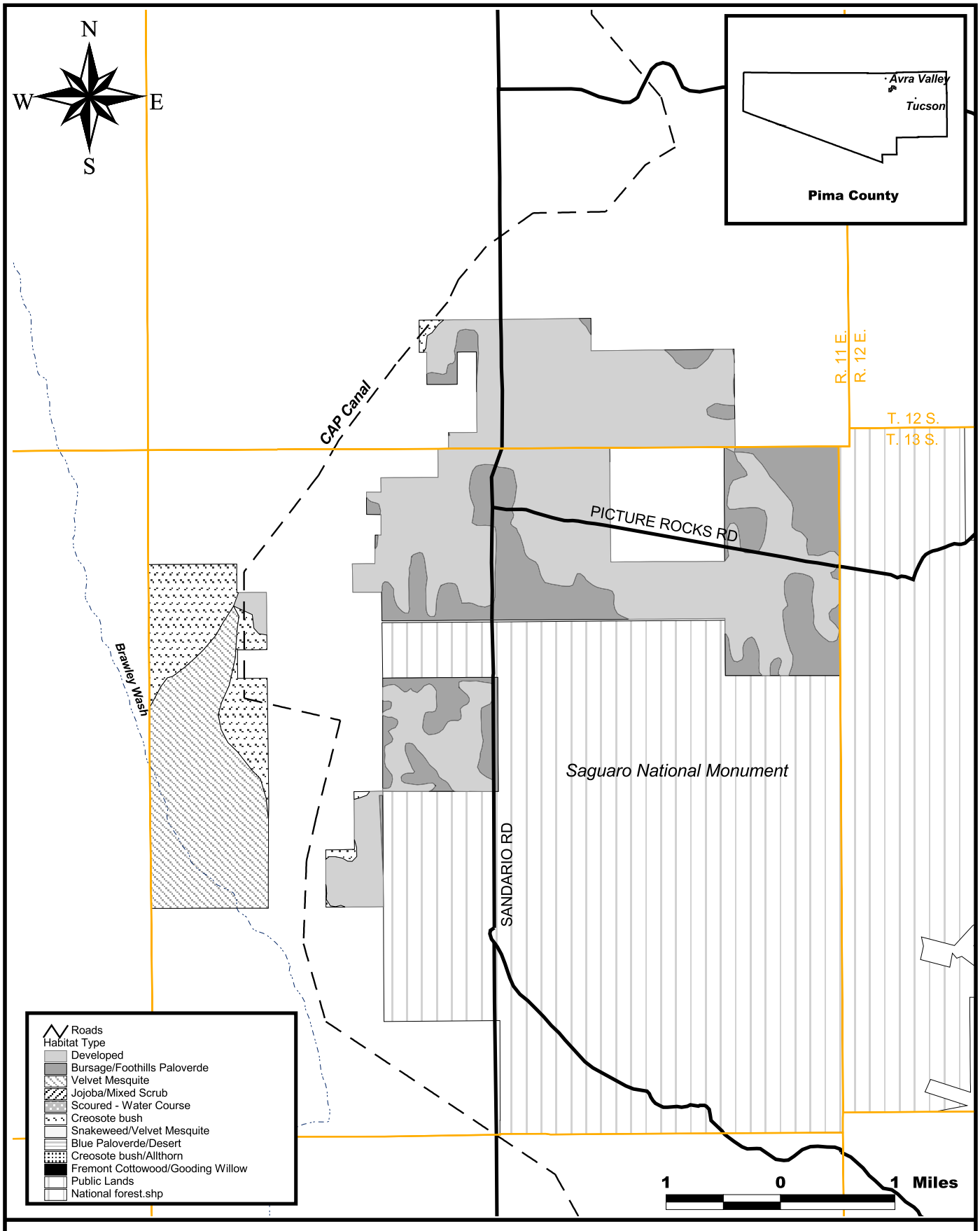
CAP Allocation Draft EIS
Cultural Resources
AVRA Water Cooperative

June 2000

Figure #L-M&I-6



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CAP Allocation Draft EIS
Habitat Zones
AVRA Water Cooperative

June 2000

Figure No. L-M&I-7

jurisdiction would be responsible for complying with the relevant provisions of the ESA as it permits and approves future urban growth.

The AVRA Water Cooperative service area is located within Pima County for which there are 16 T&E species listed by USFWS. However, potential habitat only exists for cactus ferruginous pygmy-owl. Approximately 2,869 acres of potentially suitable habitat for the cactus ferruginous pygmy-owl were also identified within the service area. None of this habitat is within designated critical habitat.

4. Water Resources

Demands in the Avra Water Cooperative have historically been met by pumping groundwater from the underlying basin fill. This reliance on groundwater has resulted in declining groundwater levels over time. The concentration of TDS in the underlying groundwater is generally less than 500 ppm.

Estimated groundwater level impacts are summarized in Table L-M&I-13 which shows the estimated groundwater level change for the period from 2001-2051 as well as the groundwater level impacts or the difference between the change in groundwater levels for each alternative relative to the change for the No Action Alternative.

All of the alternatives show more than 300 feet of rise in groundwater levels from 2001 to 2051, which largely occurs due to the substantial recharge at the CAVSARP recharge site. The action alternatives result in small declines in groundwater levels relative to the No Action Alternative of three to six feet. Substantial changes in groundwater quality and subsidence would not be anticipated to occur for any of the alternatives.

Table L-M&I-13
CAP Allocation Draft EIS
AVRA Water Cooperative–Groundwater Data Table

Alternative	**AVRA Cooperative***	
	Estimated Groundwater Level Change from 2001-2051 (in Feet)	**Groundwater Level Impact** (in Feet)**
No Action	+312	--
Settlement Alternative	+306	-6
Non-Settlement Alternative 1	+308	-3
Non-Settlement Alternative 2	+307	-5
Non-Settlement Alternative 3A	+307	-5
Non-Settlement Alternative 3B	+306	-6

*****Values correspond to the AVRA Coop sub-area, as discussed in Appendix I.
** Computed by subtracting the estimated groundwater decline from 2001 to 2051 for the No Action Alternative from the estimated change in groundwater level for the same period for the alternative under consideration. The estimated impact is considered to be more accurate than the estimated decline in groundwater levels.

5. Socioeconomic

The same population growth is supported under all alternatives, including the No Action Alternative. However, the cost of providing water may vary by alternative. Costs were estimated, on a per af basis, of providing the proposed allocations and, in their absence, alternative water supplies. The source of the alternative water supplies includes joining the CAGRD and, if needed, treating and reusing effluent. The difference in cost for this small increment of AVRA Water Cooperative's total water supply is considered insignificant. It should be noted that the increment of demand met by the proposed CAP allocation is approximately 30.7 percent of the total year 2051 demand for AVRA Water Cooperative.

Table L-M&I-14
CAP Allocation Draft EIS
AVRA Water Cooperative –Cost of Potable Water for Additional Allocation Increment

Alternative	Cost of Water ($ per af)	Water Source
Settlement Alternative	154[a]	CAP Allocation
No Action	224-225[b]	CAGRD
Non-Settlement Alternative 1	154[a]	CAP Allocation
Non-Settlement Alternative 2	224-225[b]	CAGRD
Non-Settlement Alternative 3A	224-225[b]	CAGRD
Non-Settlement Alternative 3B	154[a]	CAP Allocation

Notes:
a. Estimated average unit cost in year 2000 dollars.
b. Estimated range of unit costs in year 2000 dollars. Range is due to estimated change in groundwater pumping lifts during study period and does not include wellhead treatment costs.